

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
Fact Sheet

Permittee's Name: U.S. Fish and Wildlife Service - Williams Creek National Fish Hatchery

Mailing Address: P.O. Box 398
Whiteriver, Arizona 85941

Plant Location: 4 miles south and 9 miles east of Hondah, Arizona in Apache County

Contact Person: Sherry White

Project Leader (928)338-4901

NPDES Permit No: AZ000124

STATUS OF PERMIT

The Williams Creek National Fish Hatchery submitted a timely reapplication for the renewal of a National Pollutant Discharge Elimination System (NPDES) permit to allow discharge from this hatchery to Williams Creek, a tributary to the North Fork White River. The current NPDES permit was issued on March 18, 2002.

II GENERAL FACILITY INFORMATION

The Williams Creek Hatchery is a cold water trout hatchery located on the lands of the White Mountain Apache Tribe in Eastern Arizona. It is owned and operated by the US Fish and Wildlife Service (FWS). The facility is located in Apache County, four miles south and nine miles east of Hondah, Arizona in township 8 N, range 24 E, section 28, at latitude 34E 03' 12" N, longitude 109E 48' 38" W.

The hatchery produces approximately 87,000 pounds of apache, brook, brown, cutthroat, and rainbow trout per year. Most of these fish are subsequently stocked on nearby Native American Indian Reservations. The facility includes six ponds, 21 raceways, and 44 tanks used in the production of fish. Water for the hatchery is supplied by natural springs at the headwaters of Williams Creek. Normal operating procedures produce approximately 2.85 million gallons per day of effluent.

As a facility producing greater than 20,000 pounds harvestable weight of coldwater fish per year and requiring greater than 5,000 pounds of fish food during the calendar month of maximum feeding, this facility requires an NPDES permit pursuant to 40 CFR §122.24, and Appendix C to

that section.

III. RECEIVING WATER

In order to protect the designated uses of surface waters, the White Mountain Apache Tribe (WMAT) of the Fort Apache Indian Reservation has adopted water quality standards for different stream segments depending on the level of protection required. The WMAT Water Quality Protection Ordinance lists Williams Creek as a coldwater habitat. Designated uses include irrigation, livestock and wildlife, secondary contact, gathering of plants, and cultural significance. Williams Creek meets the North Fork White River approximately 1.2 miles downstream of the hatchery.

IV. EFFLUENT LIMITS AND RATIONALE

A. PROCESS DESCRIPTION

Wastewater, generated by fish waste and cleaning operations, is discharged to two settling ponds operated in series, then re-mixed with fish production water before final discharge to Williams Creek.

On March 17, 1994, EPA issued a Notice of Violation (NOV) to the Williams Creek Hatchery for repeated violations of the total phosphorous and total nitrogen limits in the NPDES permit. In response to this NOV, the hatchery: 1) modified its cleaning operations to decrease the amount of effluent created by such operations, and 2) changed the operation of its settling ponds from parallel operation to serial operation, thereby increasing settling efficiency. Repeated violations of phosphorus, nitrogen, and suspended solids effluent limits continued. In 1998, the FWS obtained funding to re-design and reconstruct the hatchery effluent treatment system. The treatment system went on line in the summer of 2005.

B. PREVIOUS PERMIT LIMITATIONS

The following table summarizes limitations contained in the previous permit for effluent from Williams Creek Hatchery:

Constituent	Current Limitations	Monitoring Requirements	
		Measurement Frequency	Sample Type

Flow (m3/day)	No Numeric Standard	Once/month	Continuous
Suspended Solids	10 mg/L monthly average 15 mg/L daily maximum	Once/month	Composite
Total Nitrogen	Monitoring only	Once/month	Composite
Total Phosphorus	0.10 mg/L monthly average	Once/month	Composite
Total Ammonia	1.30 mg/L monthly average 5.50 mg/L monthly max	Once/month	Composite
pH	6.5 - 9.0 s.u.	Once/month	Grab

C. DISCHARGE MONITORING REPORT (DMR) DATA

DMR data for the previous permit term was reviewed. DMR data from 2006 was specifically reviewed and is summarized below due to the installation of the treatment system in the summer of 2005.

DMR reports:

Flow: Average flow was approximately 2 to 4 MGD.

pH: All reported values were in compliance with the permit. Values ranged from 6.77 to 7.99 during 2006.

Suspended Solids: Reported daily maximum and monthly average values ranged from 1.0 mg/L to 9 mg/L during 2006, and all met permit requirements. This is a demonstrated improvement from the previous permit term, where the average monthly concentration limit was exceeded eight times and the daily maximum concentration limit was exceeded four times.

Total Nitrogen: Reported daily maximum and monthly average values ranged from 1.05 to 1.81. The permit only required monitoring for Total Nitrogen due to the inclusion of Total Ammonia limits in the permit.

Total Phosphorus: Reported daily maximum and monthly average values ranged from 0.12 mg/L to 0.22 mg/L. All reported values exceeded the monthly average limit of 0.10 mg/L.

Monthly TP levels in hatchery influent from June 2001 to May 2006 had an average concentration of 0.079 mg/L, and a maximum concentration of 0.173.

Williams Creek Hatchery has implemented several mitigation measures to control total phosphorous. During the period from 2003 – June 2006, Williams Creek Limited most fish foods (greater than 3mm in size) to those not containing more than 0.9% TP, which is considered the minimum to sustain adequate bone development in trout. In June 2006, Williams Creek Hatchery began limiting all foods to not contain more than 0.9% TP. Williams Creek Hatchery also began a vacuum system of fecal solids to complement the micro screening process to limit the exposure time of fecal solids to effluent.

Total Ammonia: Total ammonia levels during 2006 ranged from 0.05 to 0.61 mg/L during 2006. All reported values were in compliance with permit limits.

Receiving Water Bioassessments

Bioassessment. The previous permit required that the facility perform annual bioassessments of the receiving stream above and below the hatchery discharge point. The purpose of these bioassessments was to provide a survey of benthic macroinvertebrates in an effort to determine the influence of hatchery effluent on receiving water. If no significant difference is detected between macroinvertebrate communities upstream and downstream of the discharge, then bioassessments could be discontinued after two years of study. The assessments concluded that there was no significant difference in the 2 sample sites, and that the hatchery was not having an adverse affect on aquatic wildlife.

V. JUSTIFICATION FOR NUMERIC EFFLUENT LIMITS IN PERMIT

EPA promulgated new effluent limitation guidelines and standards for aquaculture facilities in June, 2004. (40 CFR Part 451). The national technology-based regulation applies to the discharge of pollutants from a concentrated aquatic animal production facility that produces 100,000 pounds or more per year of aquatic animals in a flow-through or recirculating system. Although the Williams Creek Hatchery has produced more than 100,000 pounds in the past two years, the average production rate over the past 5 years and the projected production rate for the future is under 100,000 pounds. Therefore, the facility is not subject to the effluent limitations guidelines. However, EPA has decided to establish Best Professional Judgement (BPJ) limits that are generally consistent with the intention of 40 CFR Part 451 where applicable to the proposed permit. The requirements are as follows and have been incorporated into the proposed permit:

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A. Solids control. The permittee must:

(1) Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.

(2) In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system.

(3) Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.

B. Materials storage. The permittee must:

(1) Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the U.S.

(2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

C. Structural maintenance. The permittee must:

(1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

(2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

D. Recordkeeping. The permittee must:

(1) In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.

(2) Keep records documenting the frequency of cleaning, inspections, maintenance and repairs.

E. Training. The permittee must:

(1) In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.

(2) Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

Additionally, EPA has included the following requirement to document chemical usage at the site. EPA continues to believe that Whole Effluent Toxicity (WET) testing is not required due to

the absence of a reasonable potential for the effluent to cause in stream toxicity. However, the reporting requirements for chemical usage may be evaluated in the future to determine if WET testing is required:

F. Chemical Usage. The permittee must:

1. Submit annually by January 31st each year a list of all chemicals added to water in the fish hatchery during the preceding year.
2. The chemical list shall include antibiotics, fungicides, detergents, and other cleaning agents, disinfectants and any other chemicals added to the water. The submittal shall include information on frequency and duration of use, purpose, and amounts.

Unless otherwise noted, the current permit contains the following limitations that must be met when discharging from the Williams Creek Hatchery into Williams Creek:

pH: Limits based on the WMAT Water Quality Protection Ordinance (Section 3.6)

Minimum: 6.5 s.u.

Maximum: 9.0 s.u.

Suspended Solids: The WMAT Water Quality Protection Ordinance does not include specific criteria for suspended solids. Consequently, limits are based on the previous permit, which in turn were based upon a determination made by the now-defunct Arizona Water Quality Control Council in 1976. This determination established specific suspended solids limitations for sensitive waters, including the White River and its tributaries.

Monthly Average: 10 mg/L

Daily Maximum: 15 mg/L

Total Phosphorus: Proposed limits are based on the WMAT Water Quality Protection Ordinance (Section 3.6).

Monthly Average: 0.10 mg/L

Total Ammonia: Limits are based on the WMAT Water Quality Protection Ordinance (Section 3.6), in accordance with the table for coldwater habitat in Appendix A. As a protective measure, the effluent limitation maintains the current limit based on the highest pH reading (7.93) recorded between February 2001 and January 2002 and the average water temperature (11EC) indicated by hatchery managers.

Monthly Average: 1.30 mg/L

Daily Maximum: 5.80 mg/L

Temperature: Effluent temperature is used to determine ammonia form and limit.

As required in 40 CFR 122.45(f), mass-based effluent limitations are established for suspended solids, phosphorus, and ammonia based on a design flow of 4.5 MGD.

Whole effluent toxicity (WET) testing is not required by this permit based on the lack of a reasonable potential for the facility to cause whole effluent toxicity. This determination is based upon the results of chronic WET testing conducted by the hatchery in 1994, which found no evidence of chronic toxicity in the effluent. However, EPA is including a reporting condition in the permit that the permittee must submit annually by January 31st each year a list of all chemicals added to water in the fish hatchery during the preceding year. The chemical list shall include antibiotics, fungicides, detergents, and other cleaning agents, disinfectants and any other chemicals added to the water. The submittal shall include information on frequency and duration of use, purpose, and amounts. The information may be used to assess the need and specifications for possible WET testing or specific substance monitoring in the future.

VI. Narrative Water Quality Based Effluent Limitations

Based on the WMAT Narrative Water Quality Standards, the following narrative limitations have been included in the permit:

A. Tribal waters shall be free of contaminants in such quantity and duration as may, with reasonable probability, injure human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property. In addition, the following narrative standards apply to all Tribal Waters, unless stricter standards are imposed.

1. **BOTTOM DEPOSITS.** The bottoms of all Tribal waters shall be free from water contaminants from other than natural causes that will settle and cause deleterious effects to the aquatic biota, including fish, or significantly alter the physical or chemical properties of the bottom.

2. **FLOATING SOLIDS, OIL, AND GREASE.** All waters shall be free from visible oils, scum, foam, grease and other floating materials and suspended substances of a persistent nature resulting from other than natural causes.

3. **COLOR.** Materials producing true color resulting from other than natural causes shall not create an aesthetically undesirable condition; nor shall color impair the attainable uses of the water or harm aquatic life.

4. **ODOR AND TASTE.** Water contaminants from other than natural causes shall be limited to concentrations that will not impart unpalatable flavor to fish, result in offensive odor or taste arising from the water, or otherwise interfere with the existing and attainable uses of the

water, nor shall taste and odor-producing substances of other than natural origin interfere with the production of a potable water supply by modern treatment methods.

5. **NUISANCE CONDITIONS.** Nutrients or other substances stimulating algal growth from other than natural causes shall not be present in concentrations that will produce objectionable algal densities, nuisance aquatic vegetation, result in a dominance of nuisance species instream, or otherwise cause nuisance conditions.

6. **TURBIDITY.** Turbidity attributable to other than natural causes shall not reduce light transmission to the point that the aquatic biota is inhibited or that will cause an unaesthetic and substantial visible contrast with the natural appearance of the water. Specifically, turbidity shall not exceed 5 NTU over background when background turbidity is 50 NTU or less. When background turbidity is more than 50 NTU, there shall not be more than a 10% increase in turbidity. Background turbidity may be estimated by measuring levels upstream of the human-caused impacts or during zero runoff periods (greater than five (5) days after most recent event).

7. **TEMPERATURE.** The introduction of heat by other than natural causes shall not increase temperature outside mixing zones by more than 2.00 C (50 F), based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) outside the mixing zone. Normal daily and seasonal variations of temperature that were present before the addition of heat from other than natural sources shall be maintained. In no case shall heat of artificial origin be permitted when the maximum temperature specified for the reach would thereby be exceeded. High water temperatures caused by unusually high ambient air temperatures are not violations of these standards. In cases where dissolved oxygen levels are within 0.5 mg/l of the limit, no increases in temperature will be allowed.

8. **SALINITY/MINERAL QUALITY** (total dissolved solids, chlorides, and sulfates). Existing mineral concentrations shall not be altered by municipal, industrial, or instream activities, or other waste discharges that would interfere with established designated uses. No increase exceeding 1/5 of naturally-occurring levels shall be permitted.

9. **pH.** The pH of a stream or a lake shall not fluctuate in excess of 1.0 pH unit over a period of 24 hours for other than natural causes and shall be within a range of 6.5-9.0.

10. **DISSOLVED OXYGEN.** If a surface water body is capable of supporting aquatic life, dissolved oxygen concentration shall be maintained at a minimum of 6.0 mg/l.

11. **TOXIC SUBSTANCES.** Toxic substances, including, but not limited to pesticides, herbicides, heavy metals, and organic chemicals, shall not be present in Tribal waters above those levels identified in 40 CFR section 131.36 as toxic to human, animal, plant, or aquatic life, or to interfere with the normal propagation, growth, and survival of the aquatic biota, including fish. There shall be no acute toxicity. At the edge of the mixing zones there shall be no chronic toxicity

VII. SIGNIFICANT CHANGES TO PREVIOUS PERMIT

As described in Section V, EPA has incorporated new requirements based on new Effluent Limitations Guidelines for Aquaculture as a BPJ limit.

As described in Section V, EPA has incorporated additional records and reporting requirements to report quantities of chemical usage.

Based on previous results, EPA has removed the requirement to conduct an annual bioassessment of the receiving stream.

VI. SPECIAL CONDITIONS

As described in Section V, the proposed permit contains requirements generally consistent with the intention of 40 CFR Part 451 regarding control of solids, materials storage, structural maintenance, recordkeeping, training, and chemical usage.

VIII. THREATENED AND ENDANGERED SPECIES

To determine whether the discharge would affect any endangered species or habitat, during previous permit issuance, EPA reviewed a list of threatened and endangered species associated with aquatic habitats in the White Mountain Apache Reservation. The FWS Arizona Fishery Resource Office in Pinetop, Arizona concurred with the WMAT's list of threatened and endangered species. The review indicated that there are three bird and two fish species of concern for Apache County, including the bald eagle (*Haliaeetus leucocephalus*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), Apache trout (*Oncorhynchus apache*), and loach minnow (*Tiaroga cobitis*). The major reason for decline of the bald eagle is the affect of DDT on the reproductive cycle. The major reason for decline in the remaining species of concern is habitat destruction.

This NPDES permit continues to authorize the discharge of effluent from the hatchery into areas that are not habitat to most of the aforementioned threatened and endangered species. One exception is the bald eagle which uses the North Fork White River as winter foraging habitat. However, hatchery effluent is not known to contain toxics or bioaccumulative substances that would adversely affect the bald eagle life cycle. Therefore, none of the listed species are impacted by the discharge. The permit contains provisions for monitoring conventional and nonconventional pollutants in the receiving water to ensure an appropriate level of water quality discharged by the facility. Additionally, ambient water quality monitoring, biosurveys and physical habitat assessments are also required by this permit as a method of indicating early signs of eutrophication. Re-opener clauses have been included should new information become available to indicate that the requirements of the permit need to be changed.

In considering all information available during the drafting of this permit, EPA believes that a NO EFFECT determination is appropriate for this federal action. A copy of the draft permit and statement of basis are being forwarded to the WMAT Wildlife and Outdoor Recreation Division and the FWS for review and comment.

IX. AFFECTS ON HISTORIC PROPERTIES

The reissuance of the permit should have no impact on historical and/or archeological sites since no construction activities nor changes to the operation are planned in the reissuance.

X. PERMIT REOPENER

The permit contains a reopener clause to allow for modification of the permit if reasonable potential is demonstrated during the life of the permit.

XI. STANDARD CONDITIONS

Conditions applicable to all NPDES permits are included in accordance with 40 CFR, Part 122.

XI. ADMINISTRATIVE INFORMATION

A. Public Notice (40 CFR §124.10)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft NPDES permit or other significant action with respect to an NPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit.

B. Public Comment Period (40 CFR §124.10)

Notice of the draft permit will be placed in a daily or weekly newspaper within the area affected by the facility or activity, with a minimum of 30 days provided for interested parties to respond in writing to EPA.

After the closing of the public comment period, EPA is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

C. Public Hearing (40 CFR §124.12(c))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held when there is a significant amount of interest expressed during the 30-day public comment period or when it is necessary to clarify the issues involved in the permit decision.

D. Certification (40 CFR §§124.53 and 124.54)

After the draft permit has been revised to include any relevant comments from the 30-day public comment period, it is forwarded to WMAT for CWA Section 401 certification. This certification ensures that the permit will comply with applicable Federal CWA standards as well as with WMAT Water Quality Protection Ordinance. EPA Region 9 will not issue this permit until a 401 certification is received.

VIII. ADDITIONAL INFORMATION

Additional information relating to this permit may be obtained from:

U.S. Environmental Protection Agency, Region IX
CWA Standards & Permits Office Mail Code: WTR-5
75 Hawthorne Street
San Francisco, California 94105-3901
Telephone:(415) 972-3518; email: Tinger.John@epa.gov
John Tinger

Environmental Planning Office
White Mountain Apache Tribe
P.O. Box 1000
Whiteriver, AZ 85941
Telephone: (928) 338-4346 ext. 223
Brenda Begay

IX. INFORMATION SOURCES

While developing effluent limitations, monitoring requirements and special conditions for the permit, the following information sources were used:

- A. NPDES Permit Application Forms 1 and 2B, dated May 24, 2001 and permit reapplication dated November 11, 2006.
- B. Water Quality Protection Ordinance of the White Mountain Apache Tribe of the Fort

Apache Indian Reservation. Adopted September 1, 1999.

C. 40 CFR Sections 122 and 125.

D. Sensitive Species Addressed on the Fort Apache Indian Reservation, dated May 2001.